

## Single phase AC current transducer

**CE-IJ03-\*\*\*S\*-0.2**

### 1 Overview

This device is single phase AC current electrical isolated transducer, use the principle of electromagnetic isolation, the input of AC current signal are converted into standard analog signal output. To achieve the measurement of AC current signal monitoring, the input and output of the product with a nice linearity. The products are widely used in telecommunications, electricity, railways, industrial monitoring and other fields.

#### Features:

- l Small size, installation and connection are convenient;
- l High precision, is superior to class 0.2, low temperature drift;
- l High reliability;
- l Can be customized according to customer specific requirements.

### 2 Case style



Figure1, MS1 case style



Figure2, BS2 case style



Figure 3, ES3 case style



Figure 4, BS3 case style

### 3 Part Number

|                               |   |   |   |   |   |   |   |   |   |                                        |   |                 |    |   |
|-------------------------------|---|---|---|---|---|---|---|---|---|----------------------------------------|---|-----------------|----|---|
| CE                            | - | I | J | 0 | 3 | - | # | # | S | #                                      | - | 0.2             | /x | A |
| Brand                         |   |   |   |   |   |   |   |   |   |                                        |   | measuring range |    |   |
| AC current                    |   |   |   |   |   |   |   |   |   |                                        |   | Accuracy        |    |   |
| single phase double isolation |   |   |   |   |   |   |   |   |   | case style: S1, S2, S3                 |   |                 |    |   |
| output: 3: 0-5VDC 4: 0-20mA   |   |   |   |   |   |   |   |   |   | Aperture: B: Φ6.5mm, E: Φ20mm, M: none |   |                 |    |   |
| 5: 4-20mA 8: 0-10VDC          |   |   |   |   |   |   |   |   |   | power supply: 1: 12VDC 3: 15VDC        |   |                 |    |   |
|                               |   |   |   |   |   |   |   |   |   | 2: 24VDC 4: 24VDC 9: 220VAC/DC         |   |                 |    |   |

Figure5 product model selection table

### 4 Specifications

- \* Test conditions: room temperature 25°C;
- \* Input range: current 0-0.1A~700AAC (BS2 products to 30A, GS4 products to 500A, ES3 products to 700A);
- \* Output: 0-5V, 0-20mA, 0-10V, 4-20mA; 0-5kHz, 0-10kHz;
- \* Auxiliary power supply: 12V, 15V, 24V DC, 85-265V AC/DC (BS3 case style);
- \* Accuracy: class 0.2;
- \* Load capacity:  $\geq 2K\Omega$  (voltage output);  $\leq 250\Omega$  (current output);
- \* Temperature drift:  $\leq 200\text{ppm}/^\circ\text{C}$ ;
- \* Isolation voltage:  $\geq 2500\text{ V DC}$ ;
- \* Response time:  $\leq 250\text{ ms}$ ;
- \* Rated power consumption: voltage output  $< 0.3\text{W}$ ; current output  $< 1\text{W}$
- \* Output ripple:  $\leq 10\text{mV}$ ;
- \* Frequency range: 45Hz-65Hz;
- \* Input overload capacity: 20 times of the measured current nominal value (exert one second, repeat five times, interval 300S);
- \* Operating condition: Temperature:  $-10 \sim 60^\circ\text{C}$ ; Humidity:  $\leq 95\%$  (No dew)
- \* Storage condition:  $-40 \sim 70^\circ\text{C}$ .

### 5. Connections diagram

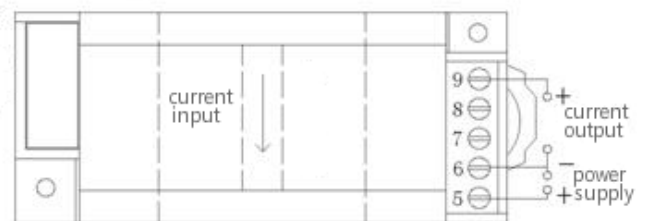


Figure6 CE-IJ03-\*\*BS2/ CE-IJ03-\*\*ES3

Connections diagram with current output

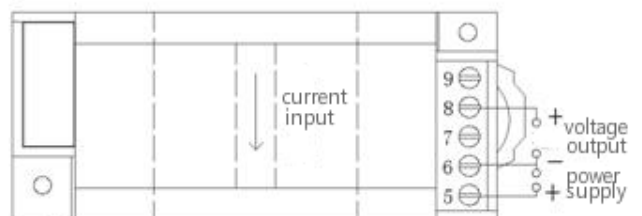


Figure7 CE-IJ03-\*\*BS2/ CE-IJ03-\*\*ES3  
Connections diagram with voltage output



Figure8 CE-IJ03-\*\*MS1  
Connections diagram with current output



Figure 9 CE-IJ03-\*\*MS1  
Connections diagram with voltage output

## 6. Mounting Diagram

DIN35rail mounting size: card slot width 35.5mm;

Screw mounting size: 73 mm×26.8mm;

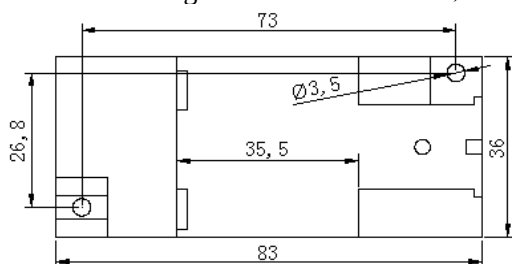


Figure 10 installation dimension

## 7. Product's Service

### 7.1 DIN rail installation method:

- ① The transducer fixed on the side of the card slot and hook on the mounting rail;
- ② Pull the spring pin down (as show in the bottom of figure1 the red spring pin);
- ③ Clip the transducer mount on the mounting rail;
- ④ Release the spring pin and clip the transmitter on the mounting rail.

### 7.2 Screw mounting method:

- ①M3 screw hole in the fixed plate according to the screw hole position shown in Figure 10;
- ②Use the M3 screw to insert into hole and fix it.

7.3 The maximum wire diameter of the terminal block is 2mm (16-26AWG). Remove the 4mm ~ 5mm insulation layer from the end of the mounting wire

and insert it into the terminal block. Then tighten the screw.

7.4 Product supply power requires the isolation voltage  $\geq 2000\text{VAC}$ , AC ripple  $<10\text{mV}$ . Multiple transducers can share a common set of power supply, but the power circuit can no longer be used to drive relays and other can produce spikes in the load, in order to avoid interference signal transmission to the transducer.

7.5 The transducers current output is 0-20mA (or 4-20mA), load resistance  $R_L \leq 250\Omega$ , and 0-5V voltage output load resistance  $R_L \geq 2\text{K}\Omega$ , can guarantee the output accuracy and linearity over the entire rated input range.

## 8. Example of product accuracy level verification

8.1 Take current signal 4-20mA output of the BS3 case product as an example, according to the transducer terminal definition to connect the circuit as shown.

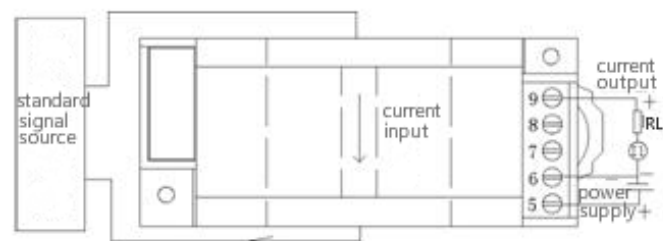


Figure 11 current input current output product accuracy test wiring diagram

Note: Voltage output load resistance parallel in pin8 and pin6 output

8.2 The test shall be carried out under the following environmental conditions:

- \* Power supply: nominal  $\pm 5\%$ , ripple  $\leq 10\text{mV}$ ;
- \* Ambient temperature:  $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ ;
- \* Relative humidity: RH (45 ~ 80)%;
- \* The accuracy of the signal source and measuring instrument is 0.05 class above.

8.3 Power preheat 2min;

8.4 Current I input and monitoring methods:

- ①A high-precision high-current meter calibrator can directly input AC current I, and record the display data of the meter calibration instrument.
- ② No high-current high-precision instrument calibrator, but there is a ordinary high-precision instrument calibrator. Use ampere-turn method to

output small current (5A, 10A or higher), and input it to the transducer input coil. The precision ammeter is tandem connection to the calibrator output end to detect input current, and convert the input current I value according to the ampere-turn method.

8.5 Suppose transducer's input is 0-30AAC, output is 0-5VDC, any given input value I within the range of the transducer, then the expected theoretical output value of the transducer ( $V_z$ ) is calculated in the following formula:

$$V_z = I \div 30 \times 5V$$

If output is 4-20mA, then  $I_z = 4 + I \div 30 \times 16mA$ ;

If output is 0-20mA, then  $I_z = I \div 30 \times 20mA$ ;

8.6 Measure the DC voltage output value  $V_o$  or current output value  $I_o$  with an output monitoring table:

$|V_o - V_z| \leq 10mV$  is normal, otherwise exceeding (0-5V output, class 0.2);

$|I_o - I_z| \leq 32\mu A$  is normal, otherwise exceeding (4-20mA output, class 0.2);

$|I_o - I_z| \leq 40\mu A$  is normal, otherwise exceeding (0-20mA output, class 0.2);

8.7 Repeat operations 8.4 and 8.5, average of all the get points  $|V_o - V_z|$  is  $\leq 25mV$  or  $|I_o - I_z| \leq 80\mu A$ , then the accuracy of the transducer is qualified.

**Note:** please consult with our company for the verification method of other technical indicators.

## 9 Notes

9.1 Please pay attention to the power supply information on the product label, and the power supply grade used by the transducer, otherwise it will cause damage to the product.

9.2 Integrated structure of the transducer, non-removable, and should avoid collision and fall.

9.3 The transducers are used in environments with strong electromagnetic interference. Standard precaution such as shielding the input and /or output lines should be observed. All lines should be as short as possible. If a group of transducers are mounted

together, keep a space more than 10mm between adjacent units.

9.4 The input value showed on the transducer label refers to the RMS value of the ac signal.;

9.5 Can only use the effective terminal of the transducer. The other terminals may be connected with the internal circuit of the transducer, and can't be used for other purposes.

9.6 Transducer has a certain anti-lightning ability, but when the transducer input and output feeders exposed to extreme bad environments, must be taken lightning protection measures.

9.7 Don't damage or modify the product label and logo. Don't disassemble or modify the transmitter, otherwise the company will no longer provide the product "three guarantees" (replacement, returns, repair) services.

9.8 The transducers use flame-retardant ABS plastic shell package, which limit temperature tolerance is  $+75^\circ C$ . The shell will be deformed with high-temperature baking, and will affect product performance. Do not use or store the product near the heat source. Do not bake the product in a high-temperature oven.

9.9 When measuring the voltage or current with the multi meter pen, please screw the terminal screw in the end, otherwise it may not measure the voltage or current output value. The terminal block wiring wire diameter  $\leq 1.4mm$ , otherwise it may cause terminal screw slipped.